

# 688

## 12-Input Field Production Mixer with 16-Track Recorder and MixAssist™



The 688 is a production sound engineer's dream come true - a portable audio powerhouse that incorporates multi-channel mixer, auto-mixer, recorder plus optional integrated powering and wireless system. By consolidating these functions, cabling requirements are significantly decreased, de-cluttering the sound mixer's bag, increasing reliability and improving ease of use. The 688 takes the finest aspects of the acclaimed 633, 664, and 788T and creatively combines them with new technology into an unrivalled production audio tool.

**Inputs and Outputs** The 688 has six high-bandwidth mic/line inputs on XLR connectors, each complete with phantom power, high-pass filter, analog input limiter and variable pan. Six additional line-level inputs on TA3 connectors offer flexibility for more complex productions.

**Routing Flexibility** All inputs are assignable, pre- or post-fade to its eight output buses, left/right plus Aux 1-6. The 688 can send its main left/right mix to three cameras simultaneously via transformer-balanced XLR and Hirose outputs.

**MixAssist™** The 688's powerful digital processing engine delivers 12-channel auto-mixing capability using the most sophisticated algorithm on the market



Left Panel



Right Panel

today. MixAssist automatically attenuates the level of inputs that are not active and helps maintain consistent background sound levels regardless of the number of open microphones. Comb filtering and phasing artifacts are also reduced when multiple mics pick up the same sound source by intelligently attenuating redundant mics.

**Recording** The 688 offers 16-track, polyphonic or monophonic broadcast WAV file recording to SD and CompactFlash cards. All common sampling rates are supported, including 192 kHz on up to six tracks. The memory cards can be set independently, recording either identical material for real-time backup, or combinations of WAV and MP3 files.

**PowerSafe™** The 688 incorporates exclusive PowerSafe circuitry with smart sensing of available power sources, front panel warning indication of power loss, and an integrated 10-second power reserve that will, in the event of an inadvertent power loss, allow the 688 to safely stop recording, properly end all file operations, and then automatically shut down.

**QuickBoot** Power on and start recording in less than two seconds. You never have to wait on sound.

**Timecode and Metadata** The 688 features a world renowned Ambient™ timecode generator and reader supporting all common rates and modes. A helpful timecode compare utility shows the difference between internal and external timecode. The 688 also generates sound reports and supports extensive metadata, via the front panel or attached USB keyboard.

### KEY FEATURES

- 12 analog inputs: Six mic/line preamps plus six line inputs all with front-panel faders & PFLs
- 16-track recording to SD & CompactFlash cards; Timecode-stamped WAV & MP3 files
- MixAssist 12-input auto-mixer
- Optional Accessories: SL-6 power distribution & 6-ch SuperSlot™ wireless receiver system; CL-6 input controller with LED metering & transport controls
- Eight output buses: L/R mix plus Aux 1-6; transformer-balanced XLR & Hirose outs for freedom from ground loops
- Two AES42/AES3 inputs, eight AES3 outputs
- Direct menu control of SuperSlot-compatible wireless (with SL-6)
- PowerSafe protects files from power loss
- 2-second power on-to-recording
- Flexible digital mixing and routing
- Supports all sample rates up to 192kHz
- Adjustable input & output delay
- Three camera returns & dedicated COM return
- Internal & external slate mic inputs
- Ambient TC generator and reader and internal TC backup battery
- Easy to navigate interface, 1000-nit LCD visible in all light conditions, configurable metering
- USB Keyboard for metadata entry
- User-configurable headphone presets
- Light-weight, durable carbon-fiber chassis
- Powered by AA-battery (x5), external DC or NP1 via SL-6



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## 12-Input Field Production Mixer with 16-Track Recorder and MixAssist™



### SL-6

For a virtually cable free bag, attach this optional power distribution and six channel wireless receiver system. Its three slots simplify interconnection between the 688 and slot-in receivers. With the SL-6, the 688 acquires digital audio plus fully integrated control of SuperSlot compatible receivers. The SL-6 also provides USB charging port, Two 12 V isolated outputs, and two non-isolated direct battery outputs for powering additional devices.

\*SL-6 Shipping Summer 2015



### CL-6

This optional input controller attaches to the bottom of the 688 and adds six full-sized tactile fader control of channels 7-12, sunlight-viewable LED metering and big, back-lit record and stop controls. When the CL-6 is attached to a 688, the 688's mini-faders, originally assigned as faders for 7-12, switch to trim controls.



### CS-664

Manufactured by CamRade for Sound Devices, this production case was designed for use with the 688 or 664 Field Production Mixer, as well as the CL-6 or the SL-6. The case accommodates NP1-type battery and includes doors to access word clock.

## SPECIFICATIONS

### Frequency Response

10 Hz to 40 kHz  $\pm$  0.5 dB, -3dB @ 65 kHz (192 kHz sample rate, re 1 kHz)

### THD + Noise

0.09% max (1 kHz, 22 Hz–22 kHz BW, fader at 0, 0 dBu output)

### Equivalent Input Noise

-126 dBu (-128 dBV) maximum. (22 Hz - 22 kHz bandwidth, flat filter, trim control fully up)

### Inputs

XLR Mic: Active-balanced for use with  $\leq$ 600 ohm mics, 4k ohm actual; 12V or 48V phantom power, 10 mA max  
XLR AES: AES3 or AES42 (10 V power), SRC  
XLR Line: active-balanced for use with  $\leq$ 2k ohm outputs, 10k ohm actual  
TA3 Line: active-balanced for use with  $\leq$ 2k ohm outputs, 10k ohm actual  
RTN A,B,C (3.5 mm/10-pin): unbalanced stereo for use with  $\leq$ 2k ohm outputs, 6.5k ohm actual  
Slate Mic (TA3): 6.5k ohms

### Input Clipping Level

0 dBu minimum

### Maximum Input Level

XLR Mic: 0 dBu (0.78 Vrms)  
XLR Line: +40 dBu (80 Vrms)  
RTN A, B, C (3.5 mm/10-pin): +24 dBu (12.4 Vrms)

### High-Pass Filters

Adjustable 80 Hz to 240 Hz, 18 dB/oct (up to 96 kHz)  
Fixed 50 Hz, 6 dB/oct (192 kHz)

### Input Limiters

Pre-fade (Inputs 1-6): +16 dBu threshold fixed, soft knee/ hard knee, 20:1 ratio, 1 mS attack, 500 mS release  
Post-fade (Inputs 1-12): Adjustable threshold +4 dBu to +18 dBu, 20:1 ratio, 1 mS attack, 500 mS release

### Input Delay

Adjustable 0-30 mS for each input in 0.1 mS steps

### Maximum Gain

Mic-In to L/R/X1/X2/X3/X4 (Line): 91 dB  
Mic-In to X5/X6 (Line): 88 dB  
Mic-In to L/R/X1/X2/X3/X4 (-10): 77 dB  
Mic-In to X5/X6 (-10): 74 dB  
Mic-In to L/R/X1/X2/X3/X4 (Mic): 51 dB  
Mic-In to X5/X6 (Mic): 48 dB

### Headphone Max. Gain

63 dB (Line 1-6 input)  
44 dB (Line 7-12 input)  
103 dB (Mic input)

### Outputs

Line (XLR and 10-pin): transformer-balanced, 120 ohms  
-10 (XLR and 10-pin): transformer-balanced, 3.2k ohm  
Mic (XLR and 10-pin): transformer-balanced, 150 ohms  
TA3 (X1-X4) Mic/Line/-10: active-balanced, 240/3.2k/120 ohms  
TA3 (X5/X6) -10: unbalanced, 100 ohms  
Tape Out (3.5 mm): unbalanced, stereo, 1.8k ohms  
Headphones (3.5 mm and 1/4"): unbalanced, stereo, 60 ohms

### Line Output Clipping Level (1% THD)

20 dBu minimum with 10k load

### Maximum Output Level

Line: +20 dBu (7.8 Vrms)  
-10: +6 dBu (1.5 V rms)  
Mic: -20 dBu (0.078 Vrms)  
Tape Out: +6 dBu (1.5 Vrms)

### Output Limiters

L/R and X1/X2, adjustable threshold +4 dBu to +18 dBu, soft knee/hard knee, 20:1 ratio, 1 mS attack, 500 mS release.

### Output Delay

Adjustable 0-417 mS (0-12.5 frames @ 30fps) for each output in 1 mS steps

### Recording Tracks

16 tracks (12 inputs, 4 output buses L/R, Aux 1/2)  
Broadcast WAV monophonic and polyphonic file format, MP3 with timecode metadata

### A/D

24-bit, 114 dB, A-weighted dynamic range typical  
Sampling rates 44.1 kHz, 47.952 kHz, 48 kHz, 48.048 kHz, 88.2 kHz, 96 kHz, 192 kHz

### Digital Outputs

AES3 transformer-balanced, in pairs; 1-2 (XLR-L), 3-4 (XLR-R), 5-6, (Hirose 10-pin RTN A), 7-8, (Hirose 10-pin RTN C)  
110 ohm, 2 V p-p, AES and S/PDIF compatible

### Recording Storage Type

SD, SDHC, SDXC Card, CompactFlash (CF)  
FAT32 formatted (<32GB), exFAT for (>32GB), on-board memory card formatting

### Timecode and Sync

Modes Supported: off, Rec Run, Free Run, 24h Run, External  
Frame Rates: 23.976, 24, 25, 29.97DF, 29.97ND, 30DF, 30ND  
Sample/Timecode Accuracy: Ambient generator,  $\pm$  0.2 ppm (0.5 frames per 24 hours)  
Timecode Input: 20k ohm impedance, 0.3 V - 3.0 V p-p (-17 dBu - +3 dBu)  
Timecode Output: 1k ohm impedance, 3.0V p-p (+12 dBu)  
Wordclock In/Out: square wave; 10k/75 ohm, 1-5V p-p input; 75 ohm, 5V p-p output, at SR  
Wordclock Termination: 75 ohm, Off

### Power

External: 10-18 V on locking 4-pin Hirose connector, pin-4 = (+), pin-1 = (-).  
Internal: accepts 5 AA-sized (LR6) batteries, nominal (NiMH rechargeable compatible)  
PowerSafe: 10 second power reserve

### Idle Current Draw

680 mA @ 12V (8.16W) - inputs 1-6 powered on, CF and SD media inserted

### Environmental

Operating: -20°C to 60°C, 0 to 90% relative humidity (non-condensing)  
Storage: -40°C to 85°C

### Dimensions (H x W x D)

5.3 cm x 32 cm x 19.8 cm;  
(2.1 in x 12.6 in x 7.8 in)

### Weight

4 lbs. 14 oz. (unpackaged, without batteries)  
2.21 kg (unpackaged, without batteries)

**SOUND DEVICES**

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